**CXS chemical dry vacuum pump**

**Vacuum drying**

Vacuum drying uses pressure reduction to remove moisture or solvents from a substance. Reducing the pressure lowers the boiling point of liquids, allowing the removal of vapours at reduced temperatures.

Drying is usually a time-consuming process, so optimised solutions provide considerable savings in time, energy and costs. Vacuum improves the drying rate significantly for very dense products and is highly effective in the recovery of toxic constituents, valuable solvents or fragrances. It is essential for producing the low temperatures required to prevent degradation and improve product quality and viability.

As experts in vacuum technology, Edwards has a full understanding of drying processes and the importance not only of pump sizing and selection for effective solids and liquid handling but also the challenges presented by corrosive, flammable, explosive and poisonous chemicals.

Edwards CXS pumps are ideally suited to vacuum drying processes in the fine chemicals, food and pharmaceutical industries. They also offer significant advantages in processes used in plastics, ceramics, dyes, paint and pigments. They are available as standalone units or as complete systems in combination with booster pumps and accessories such as flame arrestors, knockout pots, condensers and filters.

**CXS benefits**

- **No fuss**
  - Easy to install and control, quiet running, minimum maintenance
  - Just “fit and forget”

- **Simply reliable**
  - Even in difficult and demanding environments, with excellent liquid and solids handling

- **Low cost of ownership**
  - Low energy usage and utility costs

- **Robust**
  - Pumps corrosive vapours without corroding

- **Environmentally friendly**
  - No contamination of the process stream or cooling water
  - No effluent generation

- **Safety assured**
  - ATEX certified for use in hazardous environments
  - Explosion-proof
  - Safe pumping of flammable gases

- **Outstanding support**
  - From a global company famed for its best-in-class technology and applications expertise
Pressure Control with a CXS and Pressure Transmitter (PT)

Communication hardware options:
- MCM MicroTim
- Ethernet
- Profibus DP
- RS232

Any process vessel, e.g., a reactor

Feed

Reactants + Product

Distillation or Evaporation

No expensive control valve

Optional DCS, Local Control Panel or Computer

CXS VACUUM SYSTEM
CXS module options:

Module 1: CXS pump with purges, inlet and outlet flame arresters, inlet valve, inverter, controller & safety interlocks
Module 2: Solvent flush package
Module 3: Inlet valve by-pass line
Module 4: Inlet KOP with level control
Module 5: Inlet receiver with auto-drain
Module 6: EH mechanical booster
Module 7: Exhaust condenser & receiver
Module 8: Inlet condenser

Additional module options:
- Exhaust silencer
- Dust filter
- Pressure control valve
- Other control options
- Local control panel
- Additional mechanical boosters
- Documentation packages
- System skid

Drying applications
- Fine chemicals
- Speciality chemicals
- Pharmaceuticals and their intermediates
- Agrochemicals
- Plastics
- Paints, dyes and pigments
- Explosives

When to use CXS
CXS pumps should be considered for vacuum drying when:
- Minimising drying times
- Low product temperatures are required to prevent degradation and improve product quality and viability
- Low final pressures are desirable
- An end product requires extremely low levels of residual liquids
- A heated product in contact with air causes oxidation or risk of explosion
- Recovery of toxic constituents, valuable solvents or fragrances is required
- Handling tricky materials, especially particulates, sticky substances and process upsets
- Good pressure controls are required during the drying cycle
- Fast recovery of equipment cost is required
- Clean, reliable, safe vacuum is required
**CXS features**

- CXS chemical dry pumps feature cutting-edge tapered screw technology. Smooth, gradual compression along the length of the rotor results in improved thermal control and optimised performance at all inlet pressures.
- An advanced temperature management system maintains the pump temperature at programmable levels for optimal, repeatable process performance.
- The innovative design uses flooded air-gap potted, high efficiency motors. Integral drive and control systems further help to lower the cost of ownership.
- Quiet running, with noise levels typically as low as 64 dB(A).
- CXS chemical dry pumps are designed to be good at handling solids and easy to restart. They can handle at least one litre of liquid per minute continuously and slugs of up to 25 litres without stopping.
- An integral controller, PID pressure control and safety systems allow for ‘plug and pump’ operation. Pumps can be linked to any external control system via a variety of interfaces including Ethernet and Profibus DP.
- CXS chemical dry pumps have a long service interval of up to five years and require minimal maintenance over their life expectancy of more than 25 years.
- No routine service required.

**Systemisation**

Systemisation is an important consideration for successful vacuum pumping on drying applications. With CXS chemical dry pumps, systemisation is made easy. Using an extensive range of pre-engineered modules, the CXS range offers the capability to match most customer application needs.

CXS pumps are available as stand-alone pumps or as part of a complete system, including mechanical boosters for higher pumping capacities. They can also be enhanced with a range of other standard accessories such as valves, flame arresters, solvent flush kits, condensers, knock-out pots and dust filters.

Two models are available initially, the CXS160 and CXS250, which give nominal capacities of 160 m³h⁻¹ and 250 m³h⁻¹ respectively.

**Global contacts**

**EUROPE**
- UK Crawley +44 1293 528844
- UK (local rate) 08459 212223
- Belgium Brussels +32 2 300 0730
- France Paris +33 1 4121 9346
- Germany Munich 0800 000 1456
- Italy Milan +39 02 48 4471

**ASIA PACIFIC**
- China (toll free) +86 400 111 9618
- India, Pune +91 20 4075 2222
- Japan, Yachiyo +81 47 458 8331
- Korea, Bundang +82 31 716 7070
- Singapore +65 6546 8408
- Taiwan R.O.C., Jhunan Town +886 3758 1000

**USA**
- Niagara (toll free) +1 800 848 9800
- Sao Paulo +55 11 3952 5000
- Qiryot-Gat +972 8 681 0633

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